

Claims

1. An injection nozzle for an internal combustion engine, in particular in a motor vehicle,
 - having a nozzle needle (4) for controlling an injection of fuel through at least one injection orifice (5)
 - and having an actuator (3) for driving a coupling piston (15),
 - in which the nozzle needle (4) or a needle unit (10) including the nozzle needle (4) has a control surface (19) that at least partially delimits a control chamber (18),
 - the control chamber (18) communicates with a coupling chamber (16), and
 - the coupling piston (15) at least partially delimits the coupling chamber (16)characterized in that
 - the control surface (19) is situated at the end of the nozzle needle (4) or nozzle unit (10) oriented away from the at least one injection orifice (5) and
 - the actuator (3) drives the coupling piston (15) to open the nozzle needle (4) in such a way that a volume of the coupling chamber (16) increases.
2. The injection nozzle according to claim 1, characterized in that the coupling piston (15) at least partially delimits the coupling chamber (16) on a side (20) closer to the at least one injection orifice (5).

3. The injection nozzle according to claim 1 or 2, characterized in that
 - the coupling piston (15) is supported so that it can execute a stroke motion in a cylindrical chamber (22) and
 - the cylindrical chamber (22) is contained in an insert piece (25) that is situated axially between the actuator (3) and the nozzle needle (4) or needle unit (10).
- 4 The injection nozzle according to claim 3, characterized in that the cylindrical chamber (22) contains a return spring (23) that rests against the coupling piston (15) at one end and against a bottom (24) of the cylindrical chamber (22) at the other.
5. The injection nozzle according to claim 3 or 4, characterized in that a connecting path (17) that connects the control chamber (18) to the coupling chamber (16) is contained in the insert piece (25).
6. The injection nozzle according to one of claims 1 through 5, characterized in that the actuator (3) drives the coupling piston (15) via a piston rod (14), which passes through the coupling chamber (16) until reaching the coupling piston (15) and whose outer cross-section (30) exposed to the coupling chamber (16) is smaller than the outer cross-section (31) of the coupling piston (15) exposed to the coupling chamber (16).

7. The injection nozzle according to claims 3 and 6, characterized in that the coupling chamber (16) is situated axially between the insert piece (25) and a sealing plate (26) through which the piston rod (14) centrally passes.

8. The injection nozzle according to claim 7, characterized in that

- the sealing plate (26) rests axially against the insert piece (25) and/or
- an additional return spring (33) rests against the sealing plate (26) and also rests directly or indirectly against the actuator (3).

9. The injection nozzle according to one of claims 1 through 8, characterized in that a connecting path (17) that connects the control chamber (18) to the coupling chamber (16) is axially and centrally connected to the control chamber (18).